

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1-16. (canceled).

Claim 17. (previously presented) A method for synchronizing a base station with a mobile station, the method comprising the steps of:

forming a synchronization sequence $y(i)$ of length n , to be emitted by the base station, in accordance with the following relationship from a first constituent sequence x_1 of length n_1 and a second constituent sequence x_2 of length n_2 : $y(i) = x_2(i \bmod n_2) * x_1(i \text{ div } n_2)$ for $i = 0 \dots (n_1 * n_2) - 1$; and

forming at least one constituent sequence x_1 or x_2 in accordance with the following relationship from a third constituent sequence x_3 of length n_3 and a fourth constituent sequence x_4 of length n_4 :

$$x_1(i) = x_4(i \bmod s + s * (i \text{ div } sn_3)) * x_3((i \text{ div } s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1; \text{ or}$$

$$x_2(i) = x_4(i \bmod s + s * (i \text{ div } sn_3)) * x_3((i \text{ div } s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1.$$

Claim 18. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein the synchronization sequence $y(i)$ is of length 256, and the constituent sequences x_1, x_2 are of length 16.

Claim 19. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein at least one of the constituent sequences x_1 or x_2 is a Golay sequence.

Claim 20. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 19, wherein at least one of the two constituent sequences x_1 or x_2 is a Golay sequence which is based on the following parameters:

delay matrix $D^1 = [8, 4, 1, 2]$ and weight matrix $W^1 = [1, -1, 1, 1]$; or

delay matrix $D^2 = [8, 4, 1, 2]$ and weight matrix $W^2 = [1, -1, 1, 1]$.

Claim 21. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein x_3 and x_4 are identical Golay sequences of length 4 and are based on the following parameters:

delay matrix $D^3 = D^4 = [1, 2]$ and weight matrix $W^3 = W^4 = [1, 1]$.

Claim 22. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 19, wherein a Golay sequence a_N is defined by the following recursive relationship:

$$a_0(k) = \delta(k) \text{ and } b_0(k) = \delta(k)$$

$$a_n(k) = a_{n-1}(k) + W_n \cdot b_{n-1}(k-D_n),$$

$$b_n(k) = a_{n-1}(k) - W_n \cdot b_{n-1}(k-D_n),$$

$$k = 0, 1, 2, \dots, 2^N,$$

$$n = 1, 2, \dots, N,$$

$\delta(k)$ Kronecker delta function

Claim 23. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein the synchronization sequence $y(i)$ is received by a mobile station and processed for synchronization purposes.

Claim 24. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 17, wherein in order to determine a prescribed synchronization sequence $y(i)$ contained in a received signal sequence, correlation sums of the synchronization sequence $y(i)$ are determined in the mobile station with the aid of corresponding sections of the received signal sequence.

Claim 25. (previously presented) A method for synchronizing a base station with a mobile station as claimed in claim 24, at least one efficient Golay correlator is used to determine at least one correlation sum.

Claim 26. (previously presented) A transmitting unit comprising:
a part for storing or forming a synchronization sequence $y(i)$, which can be formed in accordance with the following relationship from a first constituent sequence x_1 of length n_1 and a second constituent sequence x_2 of length n_2 :

$y(i) = x_2(i \bmod n_2) * x_1(i \bmod n_2)$ for $i = 0 \dots (n_1 * n_2) - 1$, wherein it is further possible to form at least one constituent sequence x_1 or x_2 in accordance with the following

relationship from a third constituent sequence x_3 of length n_3 and a fourth constituent sequence x_4 of length n_4 :

$$x_1(i) = x_4(i \bmod s + s * (i \bmod n_3)) * x_3((i \bmod s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1; \text{ or}$$

$$x_2(i) = x_4(i \bmod s + s * (i \bmod n_3)) * x_3((i \bmod s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1, \text{ and}$$

a part for emitting the synchronization sequence $y(i)$ for synchronization with a receiving unit.

Claim 27. (previously presented) A mobile station comprising:

a part for receiving a received signal sequence; and

a part for determining a synchronization sequence $y(i)$, which can be formed in accordance with the following relationship from a first constituent sequence x_1 of length n_1 and a second constituent sequence x_2 of length n_2 :

$y(i) = x_2(i \bmod n_2) * x_1(i \bmod n_2)$ for $i = 0 \dots (n_1 * n_2) - 1$, wherein it is further possible to form at least one constituent sequence x_1 or x_2 in accordance with the following relationship from a third constituent sequence x_3 of length n_3 and a fourth constituent sequence x_4 of length n_4 :

$$x_1(i) = x_4(i \bmod s + s * (i \bmod n_3)) * x_3((i \bmod s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1; \text{ or}$$

$$x_2(i) = x_4(i \bmod s + s * (i \bmod n_3)) * x_3((i \bmod s) \bmod n_3), i = 0 \dots (n_3 * n_4) - 1.$$

Claim 28. (previously presented) A mobile station as claimed in claim 27, wherein the part for determining the synchronization sequence $y(i)$ includes at least one efficient Golay correlator.

Claim 29. (previously presented) The mobile station as claimed in claim 27, wherein the part for determining the synchronization sequence $y(i)$ includes two series-connected matched filters which are designed as efficient Golay correlators.

Claim 30. (currently amended) A method for transmitting and receiving synchronization sequences, the method comprising the steps of:

composing a synchronization sequence from two constituent sequences, wherein said synchronization sequence is structured having the following characteristics:

$$y(i) = x_2(i \bmod s + s*(i \bmod sn_1)) * x_1((i \bmod s) \bmod n_1), i = 0, \dots, (n_1 * n_2) - 1,$$

where $y(i)$ is the synchronization sequence having a length of $(n_1 * n_2)$ from two constituent sequences x_1 and x_2 of length n_1 and n_2 ;

repeating a first constituent sequence in accordance with the number of elements of a second constituent sequence;

modulating all the elements of a specific repetition of the first constituent sequence with the corresponding element of the second constituent sequences; and
mutually interleaving the repetitions of the first constituent sequence.

Claim 31. (canceled)

Claim 32. (previously presented) A method for transmitting and receiving synchronization sequences as claimed in claim 30, wherein a constituent sequence x_2 is

composed from two constituent sequences x_3 of length n_3 and x_4 of length n_4 in accordance with the formula $x_2(i) = x_4(i \bmod s + s * (i \bmod n_3)) * x_3 ((i \bmod s) \bmod n_3)$, $i = 0, \dots, (n_3 * n_4) - 1$, or is a Golay sequence.

Claim 33. (currently amended) A method for transmitting and receiving synchronization sequences as claimed in claim 3430, wherein a constituent sequence x_2 is composed from two constituent sequences x_3 of length n_3 and x_4 of length n_4 in accordance with the formula $x_2(i) = x_4(i \bmod s + s * (i \bmod n_3)) * x_3 ((i \bmod s) \bmod n_3)$, $i = 0, \dots, (n_3 * n_4) - 1$, or is a Golay sequence.